ABSTRACT OF THE DISCLOSURE

A test facility is provided for testing materials under high temperature, pressure, and mechanical loads. The facility provides a physically scaled system that simulates conditions in hot sections of gas turbine engines. A test article is coated with a test material and exposed to a hot combusting flow in a test section housing. The article may be a pipe or conduit member oriented at any direction to the flow. A second cooler flow of fluid is channeled through the test article to create a sharp temperature gradient in the test article and through the test material. A liquid-cooled sleeve is disposed about the test article to create an annular channel of combusting flow over the test article. The downstream end of the second cooler flow is connected to the upstream end of the main hot flow at the combustion chamber.

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